

### **ABSTRACT OF THE DISCLOSURE**

There is a requirement to remove oxygen from olefin-containing process streams which comprise relatively low levels of oxygen, carbon monoxide, a relatively large amount of hydrogen and optionally at least one alkyne, especially from the product streams from auto-thermal cracking of hydrocarbons. A process for removal of oxygen from such streams, without significant hydrogenation of the olefin, comprises, contacting the gas mixture in a reaction zone with a catalyst comprising at least one metal or oxide of a metal selected from the group consisting of the 10<sup>th</sup> group and the 11<sup>th</sup> group of the Periodic Table of Elements, the metal or oxide of the metal being supported on an oxide support, provided that where the catalyst comprises at least one metal or oxide of a metal from the 10<sup>th</sup> group of the Periodic Table of Elements, the catalyst also comprises tin and provided that where the catalyst comprises at least one metal or oxide of a metal of the 11<sup>th</sup> group of the Periodic Table of Elements the oxide support is a zeolite.